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GUIDELINE B-14
(formerly 15-15)

**Treatment Requirements for Municipal and Communal Waterworks
Using Groundwater Sources**

Legislative Authority:

Ontario Water Resources Act, RSO 1990, Sections 10, 52 and 75

Responsible Director:

Director, Program Development Branch

Last Revision Date:

April, 1994



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SYNOPSIS

This guideline describes the treatment that the Ministry shall require at municipal and communal waterworks using groundwater as a source for potable water supplies. It provides technical guidance to municipalities and Ministry staff on the production of potable water from these sources.

This guideline was written in support of Guideline B-5: "Drinking Water Quality". The guideline applies to waterworks operated by municipalities and others as covered under the provisions of the *Ontario Water Resources Act*, Section 52. The main function of these works is to treat raw water from ground sources to produce potable water.

Water originating from ground sources and transmitted with or without treatment to uncovered storage reservoirs is deemed not to be groundwater. Since such waters may be subject to similar contamination potentials as exist for surface water sources, this guideline is not applicable, and Guideline B-13: "Treatment Requirements for Municipal and Communal Waterworks Using Surface Water Sources", will apply.

1.0 Introduction

Water for drinking, culinary, and other domestic uses shall be safe, palatable and aesthetically appealing. It should be free from pathogenic organisms and hazardous levels of chemical and radioactive substances. Other aspects, such as corrosivity, tendency to form encrustations, and excessive soap consumption due to hardness should be controlled on the basis of economic considerations since they can interfere with the intended domestic use of the water.

Groundwater is usually of consistent quality and less susceptible to natural or anthropogenic pollution than surface water, but once contaminated, treatment is lengthy and problematic.

In order to achieve the intent, quality and characteristics set out in the Ontario Drinking Water Objectives, certain treatment processes should be provided depending on the quality of the raw water source.

To provide basic public health protection, the treatment of groundwaters will consist of continuous disinfection.

2.0 Guideline Objective

The objective of this guideline is to protect public health by ensuring that the quality of potable water produced from these works conforms to the guidelines set out in the Ontario Drinking Water Objectives.

3.0 Ministry Requirements for Municipal and Communal Waterworks

All waterworks shall have acceptable raw water supply, source protection and treatment processes to ensure that the potable water produced shall meet the guidelines set out in the Ontario Drinking Water Objectives.

4.0 Acceptability of Raw Water Supply

A sampling program with adequate analyses shall be carried out to establish the acceptability of the source supply and the raw water quality variations.

Analytical results shall accompany the application for a Certificate of Approval for a waterworks. The sampling program must be under the direction of Regional staff of the Ministry. The parameters to be analyzed shall be broadly based on the Ontario Drinking Water Objectives. In addition, analyses shall include total Kjeldahl nitrogen, ammonia, nitrite, nitrate, calcium, magnesium, potassium and silica (and hydrogen sulphide where its presence is detected). Analysis for additional parameters may be required at the discretion of Regional staff based on the local potential for contamination, or where there exists a known discharge or other situation likely to contribute contaminants.

Analyses shall be completed by such methods, and under such conditions, as recommended by the Regional staff, after consultation with other Branches of the Ministry. Results of the analyses shall be made available to the public upon request.

Responsibility for the sampling programs rests with the proponent. The Ministry, at its discretion, may assist in carrying out the sampling program.

5.0 Level of Treatment

All waterworks in the Province which utilize groundwaters as a source of raw water shall provide a treatment process consisting of disinfection.

Chlorination equipment and operation shall conform to the requirements set out in Procedure B-13-3: "Chlorination of Potable Water Supplies". Other disinfection processes capable of producing potable water of equivalent or better quality will also be considered as acceptable alternatives.

5.1 Variance from Treatment Requirements

Where it is considered that proper source protection exists and the source quality warrants a variance from the treatment requirements, exemptions may be recommended on a case-by-case basis, at the discretion of the Regional Director in accordance with Procedure B-14-1: "Granting a Variance from Treatment Requirements for Municipal and Communal Waterworks using Groundwater Sources".

5.2 Higher Treatment

Additional processes/higher levels of treatment may be required to produce potable water that consistently meets the requirements of the Ontario Drinking Water Objectives. Higher levels of treatment shall be justified by more intensive and appropriate site-specific sampling and analysis of raw water supply sources.

6.0 Review of Treatment Requirements

The level of treatment required for individual waterworks shall be subject to periodic review by Regional Offices, as necessary, especially when expansions of waterworks are contemplated.

More stringent treatment requirements may be needed as justified by site-specific sampling and analysis of raw water supply and delivered water.

7.0 Drinking Water Objectives - Compliance, Assessment and Enforcement

A comprehensive monitoring program, including regular sampling of delivered water and recording of flows, shall be undertaken by the works operating authority. This will permit assessment of compliance with Procedure B-5-1: "Ontario Drinking Water Objectives" and, when necessary, initiation of appropriate remedial measures for works not in compliance.

The monitoring program requirements, along with appropriate follow-up procedures for responding to adverse water quality results, are described in the Ontario Drinking Water Objectives. The Ministry, at its discretion, may assist in carrying out the monitoring program.

8.0 Variance from Policies and Guidelines

The concurrence of the Regional Director and the Director of the Program Development Branch must be received before any variance from the policies listed in Sections 3 to 7 and Procedure B-14-1, is granted.

9.0 Additional References

The following Ministry publications will serve as reference documents pertaining to technical details of treatment processes and requirements:

- (a) "Guidelines for the Design of Water Treatment Works" (April, 1982);
- (b) "Chlorination of Potable Water Supplies" (Procedure B-13-3); and
- (c) "Design of Water Supply Systems for Small Residential Developments" (Procedure B-14-2).

For details on the application for approval of waterworks, consult: "Guide for Applying for Approval of Municipal and Private Water and Sewage Works" (Procedure B-13-2).

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